Bonneville Dam
Debris and Guidance Screen Removal

Technical Management Team

2008 Annual Review

US Army Corps
of Engineers

Discussion Points

- Issue Description
- Contributing Factors
- Action Taken
- Outcome
- Lessons Learned
- Questions and Discussion

Issue Description

- Heavy debris load at Bonneville Dam during the spring outmigration caused juvenile bypass system screens to plug
- Plugged screens resulted in increased descaling and mortality of juvenile salmonids passing through the BII juvenile bypass system

Contributing Factors

- Volume and timing of runoff resulted in a higher debris load in 2008
- TIE crane used to clean the VBSs was out of service due to boom structural failure
  - Gantry crane was used to clean VBSs (more time consuming and less efficient cleaning method)

Contributing Factors

- First year of operation of completed FGE improvements made at BII
  - Larger, heavier VBSs (designed to be cleaned using TIE crane, could not be fully removed from gatewells with the gantry crane)
  - Flow vanes increased gatewell discharge (nearly doubled flow and increased velocities)
  - Narrower “fry” criteria bar spacing on the VBSs collected more fine debris than previous design without fry criteria

Action Taken

- As debris load increased, project staff were unable to keep BII VBSs clean
- The Corps determined it was necessary to remove the guidance screens to reduce excessive mortality of fish passing through the bypass system and to avoid potential screen failure
- TMT agreed that removing the screens until debris levels subsided was advisable
- Screens were removed May 21-23
- Screens were re-installed June 16-18

Outcome

- Following screen removal, some fish continued to pass via the bypass system even with the guidance screens removed
- Descaling and mortality of juvenile salmonids passing through the juvenile bypass system returned to expected levels
- Portland District staff estimated that the difference in the overall survival of fish passing Bonneville Dam was likely negligible
  - Chinook: screens in 96.45%, screens out 96.54%
  - Steelhead: screens in 96.52%, screens out 96.45%

Lessons Learned

- The TIE crane is essential for cleaning new VBSs when debris load becomes excessive
  - TIE crane repair to be completed prior to the 2009 fish passage season
  - Provide a more expedient and efficient means of cleaning the VBSs during high debris events
- With the new screen system in place, the project needs updated guidance protocols for handling high debris events as they occur during the fish passage season
  - The Corps and FPOM are currently tasked with developing guidance protocols for inclusion in the 2009 Fish Passage Plan

Questions and Discussion

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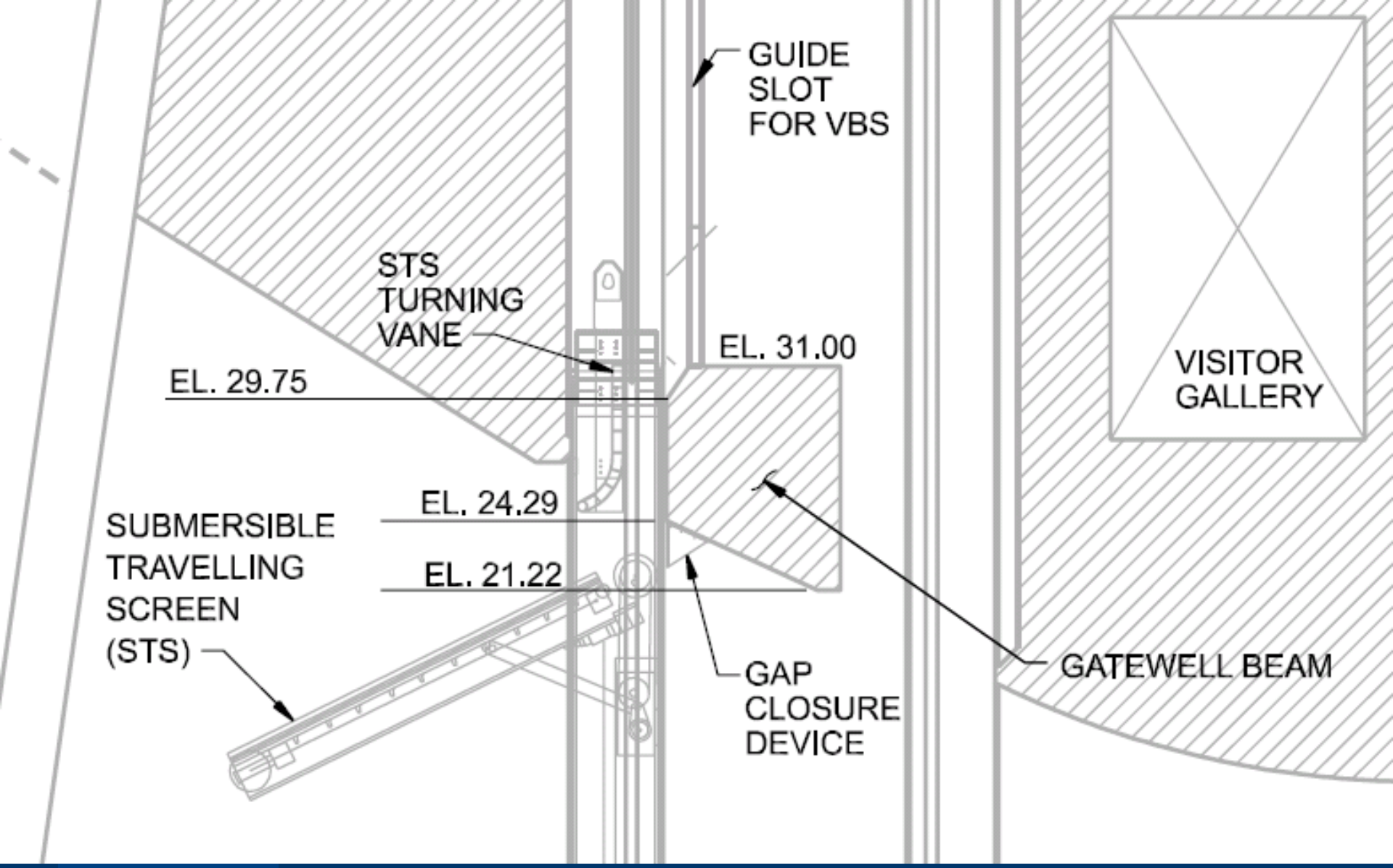
3.7.2000


GUIDE
SLOT
FOR VBS
STS
TURNING
VANE
EL. 31.00
EL. 29.75
VISITOR
GALLERY
EL. 24.29
SUBMERSIBLE
TRAVELLING
SCREEN
(STS)
EL. 21.22
GAP
CLOSURE
DEVICE
GATEWELL BEAM